

Pertussis Outbreak Continues, But Slowing

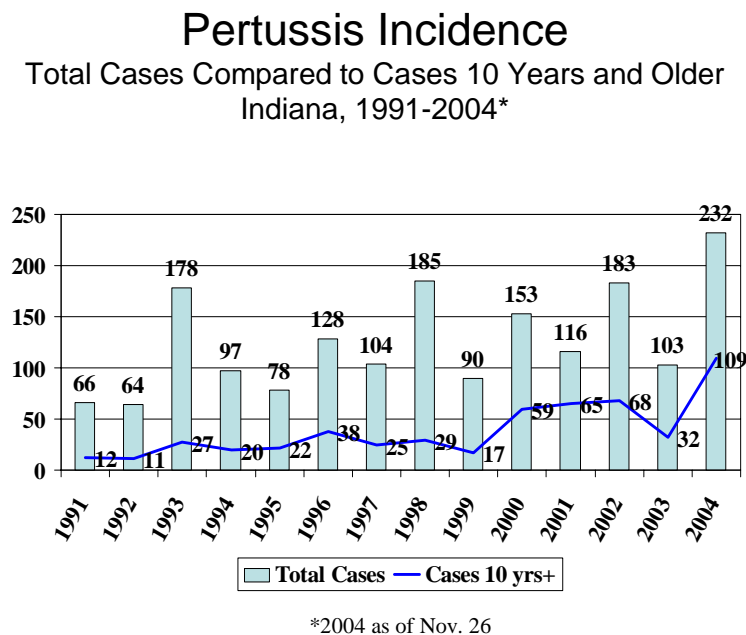
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Introduction and Background

Pertussis is the most frequently reported vaccine-preventable disease among children less than five years of age. Large numbers of cases have been reported nationally and statewide this year, with a continuing trend of increased adolescent and adult cases.

As of November 27, 2004, 15,206 cases of pertussis have been reported nationally, as compared to 8,749 in 2003. This represents a 74% increase for 2004. As of November 26, 2004, 232 cases (including 10 cases of parapertussis) had been reported in Indiana. This is the largest number of cases reported in Indiana since 1984 (259 cases). With an additional 30 cases under investigation at the end of November, it is likely that the largest number of cases since 1967 (304 cases) will be recorded this year. In 2003, Indiana recorded 103 cases; in 2002, 183 cases were reported. (See Figure 1 for recent disease incidence trend.)

Figure 1.



This report will summarize the current status of pertussis disease in Indiana with regard to age, sex, race, geographical location, and seasonality and also provide [recommendations on control and prevention](#).

Descriptive Analysis (Sex, Race, and Age) of 2004 Cases

Females have accounted for 119 (51%) of the cases reported, as compared to 113 cases in males (49%) in 2004. There have been 211 cases (90.9%) among whites, 17 cases (7.3%) among blacks, and 17 cases (7.3%) among Hispanics.

The age breakdown of cases is shown in Table 1.

Table 1. Age of Cases, January – November 26, 2004, Indiana

Age Group	Number of Cases	Percent of Cases for Age Group	Case Rate (Per 100,000) for Age Group
Less than 1 Year	50	21.6%	59.2
1-4 Years	42	18.1%	12.4
5-9 Years	31	13.3%	7.0
10-19 Years	50	21.6%	5.6
20 + Years	59	25.4%	1.2

According to Table 1, 47% of cases have occurred in those ages 10 and older in Indiana in 2004. Nationally, over 60% of cases have occurred in this age group this year. As seen in Figure 1, the number of cases in those ages 10 and older has steadily increased from 1991- 2004, from a low of 11 cases in 1992 to 109 cases so far in 2004. The trend toward increased numbers of cases in adolescents and adults is most likely due to a combination of waning immunity and better recognition and reporting of cases in the older age groups.

Immunity to pertussis begins to wane 5-10 years following the last vaccine dose (appropriately given at 4-6 years of age). Therefore, pertussis in adolescents and adults can occur even though they were fully vaccinated as children, and older children and adults often serve as the source of infection for infants, who are most at risk for the severe consequences of infection. The disease may be milder in older persons, and the infected adult or adolescent may not be identified until an ill infant has been hospitalized and/or diagnosed. Many other adults and adolescents are often undiagnosed and serve as sources of infection in the family and community. A recent prospective study (1) conducted among adolescents and adults (10-49 years of age) in a managed care organization in Minnesota reported that "...the estimated annual incidence of pertussis was 507 cases per 100,000 person-years." The study published in the May 1, 2001, issue of *The Journal of Infectious Diseases* concluded that *Bordetella pertussis*, the bacterium causing pertussis infection, may be a more common cause of cough illness among adolescents and adults than was recognized previously. The study further suggests that a booster dose of acellular pertussis vaccine at entry to middle school may be an effective strategy to prevent pertussis among U.S. adolescents. It has been reported that vaccine manufacturers have applications pending with FDA for licensure of an adolescent/adult DTaP booster dose.

Geographical Location of 2004 Cases

Pertussis has been reported in every region of Indiana. St. Joseph County has had the largest outbreak, with 94 cases reported. Table 2 indicates the counties with 5 or more cases reported this year. Twenty-nine other counties have reported at least one case in 2004.

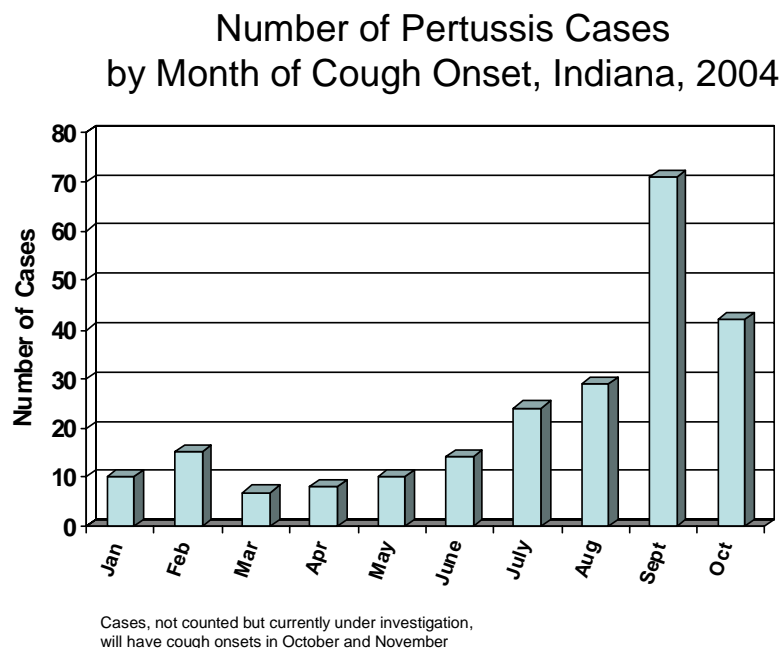
Table 2.
Indiana Counties with Five or More Pertussis Cases,
January 1 - November 26, 2004

County	Cases	Case Rate (per 100,000)
St. Joseph	94	35.5
Allen	13	3.9
Hamilton	11	5.6
Marion	9	1.1
Lake	9	1.9
Elkhart	7	3.8
LaPorte	7	6.3
Porter	7	4.7
Dearborn	6	12.8
Jefferson	6	18.7
Ripley	6	22.2
Adams	5	14.6

Seasonality

Although pertussis has no distinct seasonal pattern (cases are reported in every month of the year in the U.S.), incidence does increase during the summer and early fall months. Figure 2 indicates the number of cough onsets by month for cases occurring in 2004. (Note: Most cases currently under investigation have cough onsets in October and November but are not included in Figure 2). It appears that pertussis incidence may have peaked in September, with 71 cases having cough onset during that month. Also, the number of cases being investigated has decreased since the beginning of November, with only 64 reports of suspected cases in November, as compared to 109 reports of suspected cases in October. (Note: After investigation, not all suspected cases are confirmed as cases, and the date reported to the ISDH does not necessarily correspond to cough onset date.)

Figure 2.



Recommendations

Since cases continue to be reported, the ISDH offers the following [recommendations for prevention and control](#) of pertussis (health care providers may wish to follow the link for greater detail):

- Ensure all children eligible for pertussis vaccination are up-to-date with DTaP vaccine.
- Consider pertussis in the diagnosis of acute cough illness, regardless of the age of the patient, especially if the cough is associated with paroxysmal coughing, posttussive vomiting and/or gagging, or a cough persisting for two weeks or longer.
- Report any suspected case of pertussis to your local or state health department immediately so that control measures can be implemented. If pertussis is strongly suspected, you should not wait for laboratory results before reporting or treating the patient or close contacts of the patient. All household contacts of a case of pertussis should be given antibiotic prophylaxis. [Pertussis Treatment and Chemoprophylaxis Recommendations](#) can be found on the ISDH web site.
- Both culture and DFA testing (PCR testing is an alternative if available) should be performed on all suspected cases and symptomatic contacts of cases prior to the administration of antibiotics.

The Indiana State Department of Health wishes to acknowledge and thank the staff of local health departments and the State Immunization field staff for their dedication and many hours of work in controlling this pertussis outbreak. Far beyond the normal call of duty, their efforts certainly contributed to protecting the health of Indiana citizens.
